Appl. No. 10/010,086
Amdt. dated April 4, 2005
Reply to Office Action of January 6, 2005

PATENT

Amendments to the Claims:

This listing of claims will replace all prior versions, and listings of claims in the application:

Listing of Claims:

1.-29. (canceled)

30. (currently amended) ~~An~~ A computer-implemented informatics system for data structuring via data structuring objects executed by a computer, wherein a data structuring object includes a presentation interface, program code executable by a computer to structure data, program code executable by a computer to query data using a graphical interface, wherein the querying is done on ~~native data content in situ~~ raw data, the informatics system comprising:

an object handler for supporting the data structuring objects;

a generator for generating a data structuring object to be associated with ~~native data content~~ the raw data;

at least one description data structure within the data structuring object, wherein a description data structure describes, ~~using a common user presentation interface and interaction format the native data content~~ the raw data associated with the data structuring object;

at least one subset vector within the data structuring object, wherein a subset vector describes a subset of the associated ~~native data content~~ raw data and wherein at least one subset ~~factor~~ vector is user-defined, thereby allowing for structuring data in the context of ~~native data content~~ raw data without requiring restructuring of the data or programming; and

~~a master ontology generator for generating an ontology of data structuring objects~~

an object translation engine for generating definition tables usable for translating data structuring objects into a presentation form.

31. (currently amended) The informatics system of claim 30, wherein the at least one subset vector comprises a direct pointer to addressed content, further comprising a binary

Appl. No. 10/010,086
Amdt. dated April 4, 2005
Reply to Office Action of January 6, 2005

PATENT

pointer structure to link addressed content to ~~look-up-tables-of-the-ontology~~ the definition tables, to provide a binary-encoded look-up source for information of relevance to each data structuring object.

32. (currently amended) The informatics system of claim 30, wherein the ~~ontology~~ object translation engine comprises ~~look-up-tables~~ look-up tables organized by user, to allow for custom ~~ontologies~~ definition tables for a plurality of users.

33. (currently amended) The informatics system of claim 30, wherein the subset of the associated ~~native-data-content~~ raw data is a proper subset.

34. (previously presented) The informatics system of claim 30, wherein at least one subset vector is a multidimensional vector.

35. (currently amended) The informatics system of claim 30, wherein the at least one subset vector is represented by a matrix according to a matrix structure descriptor that maps data subsets defined within each of the data structuring object<u>s</u> to data within the associated ~~native-data-content~~ raw data.

36. (currently amended) The informatics system of claim 35, wherein the data subsets within ~~the~~ data structuring object<u>s</u> include extracted meta-data, annotated meta-data, detected content element subsets or defined content workspace subsets.

37. (previously presented) The informatics system of claim 30, further comprising logic to support a plurality of subset views simultaneously for multiple users according to one or more of user preference, level, group and environment definition settings.

38. (currently amended) The informatics system of claim 37, further comprising<u>:</u>
means for enabling content access; and
means for routing data.

Appl. No. 10/010,086
Amdt. dated April 4, 2005
Reply to Office Action of January 6, 2005

PATENT

39. (previously presented) The informatics system of claim 30, further comprising:

program code to query data using a graphical interface; and

program code for interacting with other entities of the informatics system according to information provided by the subset vectors and content description workspaces.

40. (currently amended) The informatics system of claim 30, wherein each of the data structuring objects further comprises:

program code for graphical presentation;

program code for element detection;

program code for workspace subset detection and definition; and

program code for association of meta-data and the native data content raw data associated with the data structuring object.

41. (currently amended) The informatics system of claim 30, wherein each of the data structuring objects further comprises:

program code for controlling access privileges to the data structuring object and its associated native data content raw data, wherein access privileges are represented by tuples comprising unique data structuring object identification, user identification, and a content subset definition.

42. (currently amended) The informatics system of claim 30, wherein each of the data structuring objects further comprises program code for processing data from a plurality of distinct data sources and maintaining a log of processing steps, thereby allowing monitoring and roll back of processing steps.

43. (currently amended) A system as in claim 30, wherein each of the data structuring objects further comprises program code for extraction, normalization and analysis of data content and content relationships among the data, including:

Appl. No. 10/010,086
Amdt. dated April 4, 2005
Reply to Office Action of January 6, 2005

PATENT

program code for reading ~~native data content~~ raw data associated with the data structuring

> object;

program code for translating information content of the ~~native data~~ raw data into a common

> data format;

program code for presenting the information content into the common data format;

program code for normalizing information from a plurality of ~~native~~ raw data sources to a

> compatible format;

a master query component enabling user and rule-driven queries to external databases and to

> information contained within a pool of data structuring objects.

44. (previously presented) The informatics system of claim 43, wherein the information being normalized comprises extracted meta-data, annotated meta-data, detected content element subsets or defined content workspace subsets.

45. (currently amended) The informatics system of claim 43, further comprising:

program code for generating reports as data content for data structuring objects;

program code for report auditing of data structuring object state and processing history;

program code for providing selected security for distribution, by granting or denying access

> to all or subsets of data content according to user permission determined by one or more
>
> off user identity, environment variables, group association, and level management
>
> designation;

program code for linking data structuring objects to each other according to their content

> definitions and positions within the ontology for providing query optimization,
>
> weighted clustering and relevancy ranking;

program code for linking, using ~~factors~~ vectors, source data as paths for subsequent queries;

a data link definition interface enabling selection of information presented by one or several

> databases and/or data structuring objects and definition of relationships between
>
> selected information as well as outputs and processes to be triggered according to the
>
> status of selected information; and

Appl. No. 10/010,086
Amdt. dated April 4, 2005
Reply to Office Action of January 6, 2005

PATENT

program code for monitoring and synchronizing data objects according to their status and

context.

46. (currently amended) The informatics system of claim 45, further comprising:
a status management component comprising binary triggered listening flags set on each
object and logic for communicating with a centralized state management engine; and
logic for activating communication between objects and applications on the operating
system level to ~~pipelining~~ pipeline and replay multi-step processes defined within a data
structuring object applications view.~~;~~

47. (previously presented) The informatics system of claim 43, wherein the
master query component is configured to search for data objects satisfying a search criteria and
to identify data objects interconnected to those data objects satisfying the search criteria.

48. (previously presented) The informatics system of claim 43, wherein the
master query component is configured to search multiple database fields residing in one or more
similar or heterogeneous relational databases using meta-fields created by selecting and mapping
fields presented by the relational databases through a visual interface.

49. (previously presented) The informatics system of claim 43, wherein the
master query component is configured to search multiple database fields residing in one or more
similar or heterogeneous web databases using meta-fields created by selecting and mapping
fields presented by the web databases through a visual interface.

50. (previously presented) The informatics system of claim 43, further
comprising a knowledge extraction engine to perform statistical analysis of queries and to assist
in data mining.

51. (previously presented) The informatics system of claim 43, further
comprising a distributed learning engine to validate and rank search results and to utilize report
information to optimize query efficiency.

Appl. No. 10/010,086
Amdt. dated April 4, 2005
Reply to Office Action of January 6, 2005

PATENT

52. (previously presented) The informatics system of claim 43, further comprising a neural network for creating weighted links between objects, for use in optimizing searching and analysis of interconnected data objects.

53. (currently amended) A computer-implemented method of organizing and searching data on an informatics server, comprising:

    instantiating a data object on the informatics server for each data item to be organized and searched, ~~wherein a data item comprises a data point or data set,~~ the data object including at least one pointer to a source of the data item;

    for each data object, providing a graphical user interface on a user computer system to receive object descriptors from a user to define at least ~~common~~ a presentation ~~and interaction layers~~ layer for the data item;

    in response to a user search query, accessing the source of the data item using at least the pointer;

    accessing ~~content vector~~ subsets of data pointed to by at least one subset vector and corresponding to the data item in a ~~native~~ raw data format;

    translating data into an intermediate data format from the ~~native~~ raw data format;

    performing a search for ~~a vector subset of~~ data attributes and object descriptors of the data item using the intermediate data format; and

    presenting search results for the search query using the ~~common~~ presentation layer on the user computer system.

54. (currently amended) The method of claim 53, wherein accessing content subsets of data comprises traversing pointers to data in the ~~native~~ raw data format, the pointers comprising one or more of a URL, a meta-data link, an SQL expression, a file path or a vector.

55. (currently amended) The method of claim 53, further comprising:

    determining interconnected data objects having direct information interchange of at least one component of a multi-dimensional data vector; and

Appl. No. 10/010,086
Amdt. dated April 4, 2005
Reply to Office Action of January 6, 2005

PATENT

expanding the search query to analyze the data ~~points of~~ <u>associated with</u> the data objects

determined to the interconnected.

56. (previously presented) The method of claim 53, further comprising using boundary protocols comprising program code and administrative information for controlling access to sets of data structuring objects.

57. (previously presented) The method of claim 53, further comprising generating a first search result limiting the search to data objects having object descriptors defined by the user in the search query.

58. (previously presented) The method of claim 53, further comprising knowledge extraction for statistical analysis of queries.

59. (previously presented) The method of claim 53, further comprising using a neural network enabling definition and weighting of linkages for optimizing analysis of interconnected data objects.

60. (currently amended) ~~An~~ <u>A computer-implemented</u> informatics system for managing multidimensional data from a plurality of different data sources <u>over electronic communication links</u>, comprising:

    data object means <u>executable on a computer-implemented informatics server</u> for defining
        data objects representing individual data items~~, wherein a data item is a data set or a~~
        ~~data point~~;

    direct content accessing means <u>executable on a computer-implemented informatics server</u>
        for accessing data content of data items in ~~their native~~ <u>a raw data</u> form;

    communication means for communicating with the data objects;

    object handler means <u>executable on a computer-implemented informatics server</u> for
        generating, managing, processing and querying data objects;

    data pane means for defining descriptors of the data objects;

Appl. No. 10/010,086
Amdt. dated April 4, 2005
Reply to Office Action of January 6, 2005

PATENT

translation means for converting data associated with different data items into a common

format;

master query search means for searching data objects as ~~vector~~ subsets of data <u>pointed to by</u>

<u>at least one subset vector and</u> having data attributes ~~and object attributes~~; <u>and</u>

data link description means for defining <u>data relationships and</u> data ~~content~~ subset

relationships and for triggering activity based on information pertaining to detected data

content and ~~content~~ <u>data</u> relationships.

61. (previously presented) The system of claim 60, further comprising inter-object direct information exchange means for exchanging information between data objects for related data items.

62. (previously presented) The system of claim 60, further comprising boundary protocols for virtual databases.

63. (previously presented) The system of claim 60, further comprising a knowledge extraction engine to perform statistical analysis of queries.

64. (previously presented) The system of claim 60, further comprising a distributed learning engine to validate and rank search results.

65. (previously presented) The system of claim 60, further comprising a neural network for optimizing a search of interconnected data objects and for definition and weighting of linkages for optimizing analysis of interconnected data objects.